UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,787	11/17/2000	Peter A. Barany	NORT0072US(12383RRUS02U)	9500

7590 08/10/2005	**EXAMINER**
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2664	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _28 February 2005_.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1,3-16,18-29,31-34 and 36-41_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) _5-12,14-16,18-29,37 and 38_ is/are allowed.

6) ☒ Claim(s) _1,3,4,13,31-34,36 and 39-41_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some *   c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Final Action

Response to Amendment

1.   Applicant's arguments filed on 2/28/2005 regarding claims 1, 34, 38, 39 and 41 have

been fully considered. Claims 1, 3-16, 18-29, 31-34, 36-41 are currently pending in the

application. Claims 2, 17, 30 and 35 have been canceled by the Applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in
this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person
having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

2.   Claims 1, 3-4, 13, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hakansson et al. (US Publication 2004/0062274).

Regarding claims 1, 34, Hakansson discloses a method of interleaving speech data over a

plurality frames (**source data speech frames are interleaved**, see lines 1-12, paragraph 0027),

comprising:

interleaving the speech data according to a first algorithm (**source speech data is**

interleaved for transmission according to the *diagonally blocked interleaving scheme*, see

lines 1-12, paragraph 0027) over plural frames communicated over a wireless channel (**GSM**

wireless TCH/traffic channel, see line 2, paragraph 0047, and lines 1-4, paragraph 0057) for a

first set of speech data (see lines 1-12, paragraph 0027 and Fig. 5); and

Hakansson does not explicitly disclose interleaving the speech data according to a second

algorithm.

However, Hakansson discloses that certain SID frames are interleaved according to a

block interleaving scheme (interleaving data according to a second algorithm, see lines 1-12,

paragraph 0027) over plural frames communicated over the wireless channel (**GSM wireless**

TCH/traffic channel, see line 3, paragraph 0047, and lines 1-4, paragraph 0057 and Fig. 5) for a

second set of data (**SID frames**, see lines 1-12, paragraph 0027).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the interleaving schemes of Hakansson such that the second

interleaving scheme called block interleaving scheme that applies to the SID frames is being

used as a second algorithm to interleave speech data such as the block interleaving scheme

disclosed in Hakansson. The motivation to do so is to allow a wireless channel to support more

than one bit rate and channel error protection when transmitting speech data under varying

transmission channel conditions.

Regarding claim 3, Hakansson discloses the method of claim 1, wherein interleaving the

data according to the first or second algorithm comprises interleaving over frames of a

multiframe (**see the interleaved TDMA frames in a multiframe in Figs 5 and 6**, and lines 1-2,

paragraph 0037 and lines 1-2, paragraph 0038).

Regarding claim 4, Hakansson discloses the method of claim 3, wherein interleaving over

frames of the multiframe comprises interleaving over a General Packet Radio Service multiframe

(It is inherent GPRS is the data service of the GSM system disclosed in Hakansson that the

interleaved TDMA frames disclosed in Figs. 5 and 6 are in a GPRS multiframe).

Regarding claim 4, Hakansson discloses the method of claim 3, wherein interleaving over frames of the multiframe comprises interleaving over a General Packet Radio Service multiframe (It is inherent GPRS is the data service of the GSM system disclosed in Hakansson that the interleaved TDMA frames disclosed in Figs. 5 and 6 are in a GPRS multiframe).

Regarding claim 13, Hakansson discloses the method of claim 3, wherein the multiframe comprises plural blocks (**see the multiframe that comprises of 2 blocks, one block from Last Speech frame to NoTX frame, and another block from SID frame to First Speech frame**, in Figs. 5 and 6) and each block comprises plural frames (**see the TDMA frames in each block in Figs. 5 and 6**), each frame containing plural bursts (**see the bursts in each frame in Figs. 5 and 6**), the data being carried in data frames interleaved over bursts in the plural frames (see lines 1-12, paragraph 0027 and Figs. 5 and 6), the method further comprising:

receiving an end-of-data indicating frame to indicate that a data frame is the last data frame (**see Last Speech frame in Figs 5 and 6**); and

interleaving the end-of-data indicating frame according to predetermined algorithms (see lines 1-2, paragraph 0037 and lines 1-2, paragraph 0038 and Last Speech frame in Figs. 5 and 6),

wherein interleaving the data frames according to the first and second algorithms and the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame (**see the Last Speech frame in Figs. 5 and 6**).

3.   Claims 31-33, 36, 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hakansson in view of Dent (USP 6,084,865).

Regarding claims 39, 41, 32, Hakansson discloses an article comprising at least one

storage medium containing instructions that when executed cause the system to:

receive traffic over a wireless channel portion (receives GSM wireless TCH/HS traffic

from a mobile station via a wireless interface, see line 3, paragraph 0047, and line 3, paragraph

0012) from a first mobile station (see MS, Fig. 3) involved in half-rate communication (see lines

3-4, paragraph 0012, and MS, Fig. 3);

detect that the first mobile station has entered discontinuous transmission mode

(performing discontinuous transmission by detecting periods of source data inactivity, see lines

1-2, 5-6, paragraph 0027) ; and

receive a request from the first mobile station to re-acquire the wireless channel portion,

the request transmitted by the first mobile station in response to the first mobile station exiting

discontinuous transmission mode (see paragraph 0028, lines 5-7); and

sending an assignment message to the first mobile station to assign the wireless channel

portion in response to the request (see paragraph 0084, 6-8);

Hankansson does not explicitly show a system that comprises a controller that would

multiplex traffic from a second mobile station onto the wireless channel portion while the first

mobile station is in discontinuous transmission mode. However, Dent discloses a system (see

Fig. 15) that comprises a controller (multiplexer, see Fig. 15) in which the bursts occupied by

one mobile may be used by another mobile whenever the other is silent (see col. 22, lines 65-67

and col. 23, lines 1-27). Therefore, it would have been obvious to one person of ordinary skill in

the art at the time the invention was made to combine the adaptive multi-rate wireless

communications system of Hakansson with the traffic multiplexing method of Dent such that a

second mobile station would multiplex speech and data traffic onto the channel originally being

occupied by an idle first mobile station. The motivation is do so is to dynamically allocate

available resources to other mobile stations when the resources occupied by one mobile station

become available because it would allow maximum flexibility in allocation of available

resources.

Furthermore, the Hakansson reference discloses that speech frames can be diagonal

interleaved (see paragraphs 0011) and block diagonally interleaved (see claim 26 of Hakansson)

and the motivation to do so is to minimize the transmission delay of codec mode information in

order to achieve the best possible performance of codec mode adaptation of a multimode

communication system (see paragraph 0021). In addition to this motivation, the Examiner has

realized that there is yet another motivation to use a different method of interleaving speech

frame in the Dent reference (see USP 5,091,942, elements 108, 110, Fig. 2), which is to enhance

the security of data communications and to handle a substantially greater number of mobile

stations at a significantly lower cost (see col. 1, lines 21-25 and col. 2, lines 11-25).

Regarding claim 31, Hakansson discloses the article of claim 39, wherein the instructions

when executed cause the system to receive speech traffic from the first mobile station (see col.

23, lines 1-27).

Regarding claims 33, 36, 40, Hakansson discloses all the aspects of the claimed invention set forth in the rejection of the corresponding base claim, wherein the instructions when executed cause the system to:

interleave a first speech traffic frame from the first mobile station over plural bursts according to a first algorithm (**source speech data is interleaved for transmission according to the *diagonally blocked interleaving scheme*,** see lines 1-12, paragraph 0027).

Hakansson does not explicitly show interleaving a second speech traffic frame from the first mobile station over plural bursts according to a second algorithm.

However, Hakansson discloses that certain SID frames are interleaved according to a *block interleaving scheme* (interleaving data according to a second algorithm, see lines 1-12, paragraph 0027) over plural frames communicated over the wireless channel (GSM wireless TCH/traffic channel, see line 3, paragraph 0047, and lines 1-4, paragraph 0057 and Fig. 5) for a second set of data (SID frames, see lines 1-12, paragraph 0027).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving schemes of Hakansson such that the second interleaving scheme called block interleaving scheme that applies to the SID frames is being used as a second algorithm to interleave speech data of the same mobile station such as the block interleaving scheme disclosed in Hakansson. The motivation to do so is to allow a wireless channel to support more than one bit rate and channel error protection when transmitting speech data under varying transmission channel conditions.

Allowable Subject Matter

4.   Claims 5-12, 14-16, 20-29, 38, 37, 18-19 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In lines 10-13 of claim 5, the data is carried in data frame N starting in block B(x), and wherein interleaving the data frame N according to the first and second algorithms comprises interleaving the data frame N over blocks B(x + 2k) and B(x + 2k + 2), where k = INT(N/2).

In lines 20-24 of claim 14, wherein the last data frame is data frame M starting in block B(x), wherein, if M is odd, interleaving the data frame M comprises interleaving the data frame M over busts in the last frame in block B(x) and the first three frames of B(x+2), and wherein interleaving the end-of-data indicating frame comprises interleaving the end-of-data indicating frame over bursts in the last three frames of block B(x+2).

In lines 9-12 of claim 20, data frames I, I = 0 to M, are received starting in block B(x), the controller adapted to interleave data frame I over blocks B(x + 2k) and B(x + 2k + 2), where k = INT(I/2).

In lines 9-11 of claim 38, the first data frame n is interleaved according to the first algorithm in response to n being an even number, and the second data frame is interleaved according to the second algorithm in response to n+1 being an odd number.

Response to Arguments

5.   Applicant's arguments with respect to claims 1, 34, 39, 41 have been considered but are

not persuasive.

        Applicant argued that the reference lacks the motivation to combine as cited in line , page

of the remarks, the Examiner respectfully disagrees. Specifically, the Examiner recognizes that

there can be more than one method of interleaving speech frame (see paragraph 0006) and the

motivation to do so is to provide different adaptive speech rates for different kinds of channels

such as half-rate and full-rate (see paragraphs 0003 and 0006). Furthermore, the Hakansson

reference discloses that speech frames can be diagonal interleaved (see paragraphs 0011) and

block diagonally interleaved (see claim 26 of Hakansson) and the motivation to do so is to

minimize the transmission delay of codec mode information in order to achieve the best possible

performance of codec mode adaptation of a multimode communication system (see paragraph

0021). In addition to this motivation, the Examiner has realized that there is yet another

motivation to use a different method of interleaving speech frame in the Dent reference (see USP

5,091,942, elements 108, 110, Fig. 2), which is to enhance the security of data communications

and to handle a substantially greater number of mobile stations at a significantly lower cost (see

col. 1, lines 21-25 and col. 2, lines 11-25). Therefore claims 1, 3-4, 13, 34 stand rejected under

35 U.S.C. 103(a) as being unpatentable over Hakansson et al. (US Publication 2004/0062274).

        In response to the applicant's argument that the Hakansson reference fails to teach

"receiving a request from a mobile station to re-acquire a wireless channel portion in response to

the first mobile station exiting this continuous transmission mode" as cited on page 14, lines 8-12

of the applicant's remarks, it is noted by the Examiner that Hakansson discloses a third type of

SID frame is transmitted to the base station to indicate a transition from source data inactivity to

source data activity by resuming speech transmission so that an inactive becomes active link

again (see paragraphs 0028 and 0084), which reads on the mobile station's request to indicate it

wants to exit discontinuous transmission mode and re-acquire a wireless channel portion. In

response to Hakansson fails to teach "sending an assignment message to the first mobile station

to assign the wireless channel portion," it is recognized by the Examiner that for the mobile

station to resume speech transmission, a codec mode will be selected/assigned by the base station

(see paragraph 0084) for the mobile station to use. It is well known in the art that for a call

connection to be established between the mobile station and the base station, an codec mode

assignment/acknowledgement message needs to be received at the mobile station before the

speech communication will take place. In light of this reasoning, claims 39, 41 stand rejected

under 35 U.S.C. 103(a) as being unpatentable over Hakansson et al.

Conclusion

6.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The

examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WELLINGTON CHIN
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